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> 'One of the greatest tasks for the EU is to heal the division of Europe and to extend the same peace and prosperity to the central and eastern European countries that the present EU countries have'
>
> Source: (Agenda 2000).

1 Introduction

This chapter focusses on the economic implications of European Union enlargement, with particular reference to the Italian economy. Enlargement may be viewed as the merging of two groups of countries; the present EU Member States: Austria, Belgium, Denmark, France, Finland, Germany, Greece, Holland, Ireland, Italy, Luxembourg, Portugal, Spain, Sweden and United Kingdom (EU-15); and the Central and Eastern European Countries (CEECs): Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia, and Slovenia. The main factor to be considered here is the creation of a Customs Union and Single Market which enlargement would involve.

From a methodological perspective, the economic impact of enlargement may be evaluated for the new economic area as a whole or for each Member State individually.[1] The accession, provided it takes place in the proper

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institutional framework, will foster economic growth and prosperity in both the Candidate Country and the existing Member States. Clearly, the positive impact will be much more significant for the Candidate Countries than for the existing EU countries.

As for any research, the results need to be viewed in the context of the instruments applied, the level of aggregation adopted, and the data employed if we are to obtain a correct understanding of the analysis. The present study has been done using a system of multi-sectoral models linked by means of an international trade model. The group of models, as well as the international trade model, constitute the INFORUM (INterindustry FORecasting at University of Maryland)[2] system. The Italian model in the system is named INTerindustry Italian MOdel or INTIMO. This interlinked system has allowed us to obtain unprecedented results relating to the effects of EU enlargement on a specific Member State, Italy.

The present study, which spans a period of ten years (2001–10), refers to a baseline scenario where the CEEC growth path is not strengthened by the benefits of economic integration. In the alternative scenarios, a widespread assumption that makes our simulations easily comparable with those of previous (and forthcoming) studies has been presumed: the Candidate Countries' GDP rate of growth exceeds that of the EU-15 by about 2 per cent annually.[3] Under the Europe Agreements applicant countries have made considerable progress towards full participation in the single market. Nevertheless, trade is still restricted by a bundle of tariffs mainly concentrated on agricultural and food products and by a range of border and non-border measures. The impact of the complete removal of these residual barriers to free trade is examined in this study.

Focussing on the Italian economy, the first conclusion reached concerns the evaluation of the direct and indirect impact of the assumed increase of the applicant countries' GDP growth rates. Since the econometric model of the Italian economy is based on the sectoral detail of the country's input-output tables, we have used a sectoral representation of the economy to measure the impact of the applicants' demand for goods and services; namely, their import structure. Since historical data on trade between the CEECs and the EU indicate the concentration of the import–export flows in a clearly defined bundle of commodities, we have investigated the effect of this trade specialization on the performance of the Italian economy.

The simulation design allows us to compare the impact of the trade between Italy and a CEEC with the more significant effect of the EU-15 trade with the CEEC. In the first case, we have two countries, Italy and the CEEC, and in the second case, we have two country-sets, EU-15 and the CEEC, with Italy constituting a single region of the EU. This second case allows us to measure the indirect effect of the Eastern European enlargement on Italy. Furthermore, there is a third scenario where the composition of the CEEC's imports is considered. This experiment provides evidence that in the case of Italy – which is close to the Eastern EU border – the indirect impact on the GDP

rate of growth is even more important than the direct one. The transmission of the increase generated by enlargement is as important as the direct trade with the new entrants. While the effect of the increase on exports induced by a growing demand for goods by the CEEC is preserved throughout the simulation period, that increase is doubled by the indirect effect. Moreover specialization in the CEECs' imports generates a further increase in the GDP rate of growth, so that the total increase amounts to a factor of circa 2.6 with respect to that found in the case of Italy/CEEC.

This result clearly demonstrates that Eastern enlargement is not simply a question of boundaries. In particular, it is clear that – for countries such as Spain – the indirect effect of Eastern enlargement may be much more significant than the direct effect. Furthermore, the sectoral analysis of foreign trade – together with the sectoral evaluation of its impact – is crucial for understanding the effects of enlargement. The importance of a sectoral representation of the economy becomes clearer when the removal of tariffs and non-tariff barriers (NTBs), which mainly concern agriculture and food industry products, have been evaluated. NTBs still apply and constitute the bulk of measures hampering international trade between the CEECs and the EU. Moreover, these measures are concentrated on particular products. For example, the international trade model used in this study examines information on 120 commodities; here, the NTBs – specifically singled out for simulating their removal – account for about 15 per cent of the range of commodities considered by the model.

As regards the simulation results for the removal of tariffs and NTBs, two alternative scenarios have been formulated: in the case of NTBs it is impossible to measure the precise size of their mark-up effect on price formation; the two scenarios refer to a generous effect in terms of Baldwin's hypothesis which assumes an overall reduction of 10 per cent (Baldwin, Francois and Portes, 1997), and to a conservative hypothesis similar to that proposed by Keuschnigg and Kohler (1999).

The chapter is organized as follows. Section 2 presents the key data on Candidate Countries (CCs) and the structure of Italian foreign trade. The modelling approach used for dealing with the main economic issues involved with enlargement is briefly described in Section 3. In Section 4, the baseline and the simulation scenarios are described, while in Section 5 the structural changes in the Italian economy produced by Eastern enlargement are presented. Finally, results and conclusions are underlined in Section 6.

2 Key data on the Candidate Countries

2.1 Macro data

The CCs rank very differently in terms of their 'applicability' for full membership. In the year 2000, for example, they accounted for 45 per cent of EU population but only 7 per cent of EU GDP, with GDP per capita varying from

Table 8.1 Key data on the 13 candidate countries in 2000

	Population (millions)	*Area (km^2)*	*GDP (€bn)*	*GDP in PPS(€bn)*	*Population*	*Area*	*GDP*	*Index of GDP in PPS*
						(as % of EU-15)		
Bulgaria	8 191	11 971	13.0	5 400	2.2	0.4	0.2	24.0
Cyprus	755	9 251	9.5	18 500	0.2	0.3	0.1	82.1
Czech Republic	10 278	78 866	550.0	13 500	2.7	2.5	0.6	59.9
Estonia	1 439	45 227	5.5	8 500	0.4	1.4	0.1	37.7
Hungary	10 043	93 030	495.0	11 700	2.7	2.9	0.6	51.9
Latvia	2 424	64 589	7.7	6 600	0.6	2.0	0.1	29.3
Lithuania	3 699	65 300	12.2	6 600	1.0	2.0	0.1	29.3
Malta	388	316	3.9	11 900	0.1	0.0	0.0	52.8
Poland	38 654	312 685	171.0	8 700	10.3	9.8	2.0	38.6
Romania	22 456	238 391	40.0	6 000	6.0	7.5	0.5	26.6
Slovakia	5 399	49 035	20.9	10 800	1.4	1.5	0.2	47.9
Slovenia	1 988	20 273	19.5	16 100	0.5	0.6	0.2	71.5
Turkey	64 818	769 604	217.4	6 400	17.2	24.1	2.5	28.4
EU-15	376 455	3 191 000	8 526.0	22 530	100.0	100.0	100.0	100.0

Source: Eurostat (2001).

between 24 per cent of the EU average in Bulgaria to 82 per cent in Cyprus (see Table 8.1).

Given this variation in the 'applicability' ranking, the Candidate Countries have over time been classified as either 'front-runners' or 'latecomers'. At the Luxembourg Council in December 1997, a group of five CEECs (the Czech Republic, Estonia, Hungary, Poland and Slovenia) were selected for EU membership in 2002. In 2001, all the candidates were posed on the same starting line. In December 2001, on the basis of the *Strategy Paper* and the *Regular Report on Enlargement*, the Laeken Council concluded that ten CCs would be ready for membership in the year 2004, making a modest 'enlargement' of the former group. These candidates were the front-runners in the so-called Luxembourg Group together with the two Baltic republics of Latvia and Lithuania, the islands of Cyprus and Malta, and Slovakia. For the time being, the other candidates, Bulgaria, Romania and Turkey were not scheduled to become EU members before the year 2007 (i.e. they were not covered by the *Agenda 2000* horizon). These three countries constituted a relatively large proportion of the population of the original group of candidates; therefore, the 'size' of the enlargement has been significantly re-scaled.

On the basis of the data contained in Table 8.1, Table 8.2 summarizes the data on the Luxembourg Group, the 'New 5', and the Laeken Group (namely, the Luxembourg Group plus the 'New 5'). It also outlines statistics on the Southern enlargement of Greece, Portugal and Spain which joined the EU-9 in the 1980s.

The population of Greece, Portugal and Spain amounted to 21.6 per cent of the EC-9 in 1985, while the Laeken Group is slightly below 20 per cent of the EU-15. As regards GDP, the Eastern candidates for enlargement have a GDP of slightly over 4 per cent, rising to 9 per cent in terms of PPS. The Southern enlargement generated an increase of GDP of 10.4 and 14.3 per cent

Table 8.2 The Eastern and Southern enlargements: population and GDP

(Percentages)

	Population	*GDP*	*GDP in PPS*	*Per capita GDP in PPS*
Eastern (as of 2000)				
Luxembourg Group	16.6	3.5	7.5	45.3
New 5	3.4	0.6	1.4	41.1
Laeken Group	19.9	4.2	8.9	44.6
EU-15	100.0	100.0	100.0	100.0
Southern (as of 1985)				
Greece, Spain, Portugal	21.6	10.4	14.3	65.9
EC-9	100.0	100.0	100.0	100.0

Source: Eurostat (2001) and DG ECFIN (April 2001).

respectively for the EC countries. These differences are reflected in the relative level of GDP per capita in PPS. While the average GDP per capita for Greece, Portugal and Spain amounted to two-thirds of that of the EC-9, per capita GDP for the Candidate Countries does not amount to 50 per cent of that for the EU-15.

The comparative data on population and GDP in Table 8.2 suggest that from a macroeconomic perspective, the impact of the CCs on the EU economy is likely to be small. Indeed, the weight of the 'Laeken Group' is relatively smaller than that of the 'Southern enlargement group' which was relatively smoothly absorbed by the EC-9. However, the low level of income of the future members will cause a significant EU transfer in the name of economic cohesion. Nevertheless while the impact of the Eastern enlargement on the economy of the EU as a whole or on that of single Member States is generally considered modest, the budgetary implications are likely to be highly significant.

Generally speaking, the Member States lacked a clear overall strategy to tackle the effects of the collapse of Communism. The first reaction was to set up the PHARE programme of assistance in December 1999. Subsequently, the European Council agreed on the plan to negotiate Association Agreements with individual countries (April 1990). This plan, which in several respects marked a turning point, was called 'Europe Agreements' and has characterized the relationships between the European Community (and subsequently the European Union) and the CEECs throughout the 1990s. One objective of the Agreements was to promote trade liberalization by removing trade barriers and encouraging the CEECs to direct economic activity towards the western European markets. In this way the trade flows of the Candidate Countries were diverted from East to West, and their shares of EU imports and exports indicate the progress made in terms of integration with the EU economy (see Table 8.3). The EU shares of CCs' imports range from 44 to 68 per cent, whilst their share of exports go from a minimum of 47 per cent for Cyprus to over 76 per cent for Estonia. For the EU as a whole, each CC represents a negligible share in terms of both end market and supplier.

The preparations for enlargement that were initiated by the Europe Agreements immediately after the collapse of the Soviet Union have yielded positive results. The PHARE programme which involved EU assistance in steering the CEECs' economy towards a market economy, the positive effect of a remarkable flow of foreign direct investment (FDI), and the generous removal of many European trade barriers, have all helped stimulate the growth of the CCs. The average GDP rates of growth in the years 1995–99 shown in Table 8.4 reveal a very successful process of 'catching up' which has highlighted the performance of the Laeken Group of countries. One task of the enlargement process is to respond to the existing division within Europe by extending the benefits of peace and prosperity to the present EU's neighbours; the speed with which the CCs are currently moving is certainly encouraging, at least for the near future (see the last three columns of Table 8.4).

Table 8.3 Relative EU shares of the Candidate Countries' imports and exports in 2000 (*percentages*)

Candidate Countries	*EU's share in CCs' imports*	*EU's share in CCs' exports*	*CCs' share in EU imports*	*CCs' share in EU exports*
Bulgaria	44.0	51.1	0.3	0.3
Cyprus	55.9	47.7	0.1	0.3
Czech Republic	62.0	68.6	2.1	2.5
Estonia	62.6	76.5	0.3	0.3
Hungary	58.4	75.1	2.1	2.5
Latvia	52.4	64.6	0.2	0.2
Lithuania	43.3	47.9	0.2	0.3
Malta	59.9	33.5	0.1	0.3
Poland	61.2	69.9	2.3	3.6
Romania	56.6	63.8	0.7	0.9
Slovakia	48.9	59.1	0.7	0.7
Slovenia	67.8	63.8	0.6	0.9
Turkey	48.8	52.3	1.7	3.2

Source: Eurostat (2001).

Table 8.4 GDP rates of growth of Candidate Countries

Candidate Countries	*Average GDP growth rate at constant prices 1995–99 (%)*	*GDP growth rate at constant prices in 2000 (%)*	*Spring 2003 forecasts*			
			2001	*2002*	*2003*	*2004*
Bulgaria	−1.8	5.8	4.0	4.3	4.5	5.0
Cyprus	4.0	4.8	4.0	2.0	2.0	3.8
Czech Republic	1.5	2.9	3.2	2.0	2.8	3.9
Estonia	4.6	6.9	5.0	5.6	4.9	5.1
Hungary	3.3	5.2	3.7	3.3	3.7	4.1
Latvia	3.2	6.6	7.9	6.1	5.5	6.0
Lithuania	3.2	3.3	5.9	5.9	4.5	5.0
Malta	4.5	5.0	−0.8	3.0	3.1	3.7
Poland	5.7	4.0	1.0	1.3	2.5	3.7
Romania	−0.6	1.6	5.7	4.9	4.9	5.0
Slovakia	5.0	2.2	3.3	4.4	3.7	4.5
Slovenia	4.2	4.6	3.0	3.0	3.4	3.7
Turkey	3.9	7.2	−7.4	7.8	3.7	4.5
EU	2.4	3.3	1.6	1.1	1.3	2.4

Source: Eurostat (2001) and European Commission, ECFIN (2003a,b).

2.2 Sectoral data

The accession of the CCs, provided it takes place within the proper institutional framework, should foster economic growth in both the CEEC and the EU Member States. Obviously, the impact will continue to be skewed as the positive impact on the applicants will be much more significant than the equivalent impact on the EU-15 which is generally expected to be modest. But this result is strictly related to the level of aggregation; from a macroeconomic perspective, the enlargement may have a negligible effect, while a sectoral impact may be substantial in some cases.

Table 8.5, which provides sectoral import-export data according to the Chapters of Combined Nomenclature (CCN) of the Harmonized System, contains those with a share over the total EU-15 exports to and imports from the CEEC-10 – the Leaken Group of ten countries – greater than 1 per cent. In part due to the CCN definition, about five Chapters cover 50 per cent of the trade flows between the EU-15 and the Laeken Group. This group of CCN largely dominates the bilateral flows between the EU-15 and single CCs. During transition, these commodities have maintained and even increased their trade significance with EU countries. Indeed, specialization of trade has been detected in a number of EU Member States. In France and Italy the trends of import–export flows are very similar and close to the EU average. In Germany these flows show the same – albeit less sharp – trend towards specialization; and in Spain import–export flows concentrate on a remarkably limited bundle of commodities. This observed structural change in EU/CEEC trade flows deserves closer investigation; meanwhile, it is to be noted that this fact appears to confirm the emerging pattern in trade specialization detected by Baldone, Lasagni and Sdogati (1997) in the early 1990s.

2.3 The international trade pattern of a Member State: the case of Italy

The statistics provided by SISTAN (*Sistema Statistico Nazionale*, National Statistical System) and ISTAT (*Istituto Nazionale di Statistica*, National Statistical Institute) contained in the Italian Trade Centre (ITC) Report (2002) cover a sizeable amount of data on Italy's trade patterns (exports and imports), including information on commodities for 19 economic sectors and for Italian trade partners. Table 8.6 shows the CEEC shares in the Italian trade flows in year 2001. The CEEC average share in each EU Member State's foreign trade is about 3 per cent (Eurostat, 2001); these shares vary across the Member States and across the sectors. At a glance, the CEEC sectoral shares in Italian foreign trade are above the EU average, caused by the relative boundary position of Italy with respect to the Eastern European countries. In particular, the intra-trade for textiles, clothing, leather goods is remarkable. These sectors are those where the outsourcing has been well

Table 8.5 Sectoral shares of EU total exports and imports in 1998

EU exports to CEEC-10		*EU imports from CEEC-10*	
Machinery and mechanical appliances	19.74	Electrical machinery and equipment	12.33
Electrical machinery and equipment	13.79	Machinery and mechanical appliances	11.13
Motor vehicles and parts thereof	12.21	Motor vehicles and parts thereof	9.94
Plastic and plastic products	5.09	Clothing accessories (not knitted)	8.80
Paper, paper product and pulp	2.72	Clothing accessories (knitted)	5.45
Articles of iron and steel	2.59	Furniture, lamps and lighting fittings	4.60
Optical and precision instruments	2.46	Wood and articles of wood	3.94
Pharmaceutical products	2.32	Iron and steel	3.89
Iron and steel	2.17	Articles of iron and steel	3.45
Mineral fuels	1.75	Mineral fuels	2.90
Other chemical products	1.59	Plastic and plastic products	2.07
Furniture, lamps and lighting fittings	1.53	Footwear	1.85
Paints and varnishes	1.44	Aluminium and articles thereof	1.78
Man-made staple fibres	1.32	Edible fruits and nuts	1.58
Organic chemicals	1.22	Rubber and articles thereof	1.51
Cotton	1.08	Other textile articles	1.39
Rubber and articles, perfumery	1.06	Glass and glassware	1.15
Aluminium and articles thereof	1.06	Organic chemicals	1.10
Essential oils, cosmetics, perfumery	1.06	Paper and paper products	1.09
Clothing accessories (not knitted)	1.02	Copper and articles thereof	1.05
Hides, skins and leather	1.00	Cotton	0.98
Total	78.23	Total	81.98

Source: Eurostat, COMEXT.

developed in the recent decades. Some sectoral import shares are much different in size with respect to the corresponding export shares; these differences may be important when evaluating the impact of the removal of trade barriers that is part of the enlargement process: price changes of products used as intermediate consumption goods and those of commodities for final use, both hit the competitiveness of domestic industries, but with opposite effects.

Table 8.6 CEEC-10 imports and exports percentage shares in sectoral Italian foreign trade by product group in 2001

	Imports	*Exports*
Agriculture, forestry and fisheries	6.5	6.2
Mining	0.0	4.4
Food & tobacco	1.4	0.6
Textile industries	20.9	9.1
Clothing	17.8	11.0
Leather goods, shoes	25.0	9.6
Wood products	10.1	2.1
Paper products	3.0	6.6
Petroleum products	5.3	7.4
Chemical products	0.6	5.3
Rubber and plastic products	4.0	7.5
Non-metal minerals and products	15.4	3.4
Metal products	6.2	9.4
Machinery	3.2	5.7
Precision instruments	1.0	11.0
Motor vehicles	5.2	5.9
Other transport equipment	0.4	1.2
Furniture	16.4	1.1
Other manufactured products	4.5	1.2

Source: ICE-ISTAT (2002).

3 Economic issues and the modelling approach

3.1 Trade effects: the Bilateral Trade Model (BTM) and the system of multisectoral models

The problem faced in this study is the evaluation of the EU's Eastern enlargement on the economy of a single Member State. The enlargement surely concerns the two groups of countries directly engaged in the process. However, each EU-15 member state and each CEEC trades with almost every other country in the world. Trade creation, trade diversion and trade specialization related to the enlargement influence world trade. Therefore, the description of the modelling approach begins with the trade model that links the multisectoral models in the system.

The trade model incorporates the argument: 'Developments in productivity are the result of many different factors, but depend largely on investment performance, which determines the structure and size of the capital stock and enables the penetration of new technologies in the economy. A higher rate of investment growth raises the capital available per worker and thereby – ceteris paribus – labour productivity. A high rate of innovation in a context of strong investment growth also increases the quality of the capital stock.' (Excerpt from the *Broad Economic Policy Guidelines* (European Commission,

2002)). In fact, the world commodity trade model used is the Bilateral Trade Model (BTM) created and originally estimated by Qiang Ma (1996), which is continuously being revised and updated. The basic idea underlying this trade model was formulated in the late 1960s (see Armington, 1969a,b, and Rhomberg, 1970, 1973); subsequently a number of studies tackled estimation problems involved in the construction of this kind of trade model (see, e.g., Nyhus, 1975 and Fair, 1984). BTM is estimated using a bilateral database, WTDB, released by Statistics Canada and made available to the Inforum Research Centre. This database provides high quality and up-to-date information on commodity trade, which covers world commodity trade and makes the bilateral model genuinely 'global'. The raw data set has been subjected to two aggregations. One concerns the commodity classification, where the large number of commodity flows have been reduced to a set of 120 trade flows. The second is geographical so that the number of trading countries has been reduced from 200 to about 60, including the countries of the system of multisectoral models[4] and other countries or groups of countries (for instance, the transitional economies of Eastern Europe, the OPEC countries, South Africa, other developing Asian countries, and major South American countries). The data allow us to construct bilateral trade flow matrices for 120 commodity groups. Each matrix has a number of rows and columns that are related to these 60 countries. The BTM database is ready to accommodate this huge number of countries and the present working version is tailored to the existing country models in the system. The structure of the data allows us to investigate the trade structure of other countries not yet included in the system of models and, hence, to tackle problems such as those considered in this research.

The BTM takes the sectoral imports from each country model and allocates them to the exporting countries within the system by means of import share matrices computed from the trade flow matrices; imports demanded from a country by all its trading partners equal its exports. Hence, exports turn out to be endogenous in the interlinked system. The key work of the model is to calculate the movement in 120 import-share matrices. Each cell (i.e., each import share) of these matrices, which records a non-null trade flow, is modelled by means of an equation. For each exporter country, each importer country and each commodity considered in the model, the non-null trade share is explained by (a) the effective price of the good in question relative to the world price of the good as seen from the importer country, (b) an index of the capital stock in the industry of the exporter country relative to an index of world average capital stock in the industry in question as seen from the importer country, and (c) a peculiar time trend suitable for dealing with bounded variables.

The BTM work begins with the collection of prices, imports and capital investments, but we see that the share equations require capital stock data which are intentionally not collected from the country models, even if they

are endogenously computed. Capital stock data made available from official national statistics are largely based on different criteria, and may not always be comparable (as required in the above equation). Consequently, we chose to compute capital stocks directly from statistics taken from a 'comparable' perpetual inventory model where comparability is mainly based on the use of a common depreciation rate. The idea behind a relative capital stock as an explanatory variable is that technical progress is part of new investments. A capital stock that contains more recent investments may render the industry more competitive. In other words, an industry can buy market share by investing. In order to accentuate this assumption, the capital stock is computed from investments, and the depreciation rate is consequently chosen as a strategic variable. (At present, it is equal to 8 per cent.)

The BTM links the models of the Inforum system, which consists of multisectoral models of Western Europe (Germany, France, Spain, Austria, the UK, Belgium and Italy), the Far East (China, Japan, South Korea and Taiwan), and Central-North America (Canada, the United States and Mexico).[5] Each country model has been constructed by the country partner so that it embodies the peculiarities of the economy as observed and understood by the model builder. As described in Grassini (2001), a more descriptive name for these models might be Interindustry Macroeconomic Models (IMM) or Multisectoral Macroeconomic Models (MMM); 'interindustry' and 'multisectoral' stress the presence of an input–output structure and the detailed representation of the industries in the economy; and 'macroeconomic' emphasizes that the usual variables of macroeconomics are covered.[6] Inforum models are rooted in data: an enormous database is necessary to support a proper IM model given the underlying belief that a model incorporating as much past economic outcomes as possible will have a better chance of accurately simulating policy changes than a model that incorporates less information.

Like macroeconometric models, Inforum models use regression analysis on a time-series. Therefore, parameters in behavioural relations are econometrically estimated using observed economic outcomes and not calibrated by the model builder. A distinctive property of these models is their 'bottom-up' approach; that is, the macro totals are obtained by summing the industry details.

Inforum models are explicitly dynamic, with real dates on each year's solution, and the researcher also knows the dynamic path by which the new solution is reached, which may have enormous practical implications for those policy makers who are often just as interested in the path to equilibrium as they are in the ultimate equilibrium point. Predictions of time paths are naturally computed at the industry level: the macro dynamics are simply the result of the industry dynamics. For example, we will show that, after enlargement, sectoral growth paths are not at all steady over time, with accelerations, decelerations, recessions and recoveries occurring along the simulation horizon. Therefore, an economic analysis of the enlargement effects based only

upon the comparison between two equilibria would be misleading: the model should offer guidance as to how sectors may cumulate gains and losses along the path, so that policy makers may consider potential policy actions.

The integration of the Italian Inforum[7] model into a family of interlinked models has a number of important advantages for the analysis of the questions under consideration. In contrast to any economic analysis with a 'stand alone model' of a national economy, it enables the consideration of a number of indirect effects of enlargement. The following list cites just a few of these relevant effects operating through the European economies on a specific Member State:

- changes in the demand for Italian commodities as intermediate products by other EU countries due to additional imports from CEECs to present EU members other than Italy;
- changes in the demand for Italian consumption goods by other EU countries induced by income effects caused by economic growth in present member states due to enlargement;
- changes in the demand for Italian capital goods from other EU countries due to the same economic reasons explained above;
- substitution effects in trade with CEECs between commodities of EU member states – Italy included – due to changes in competitiveness, caused by the impact of the removal of trade barriers on relative prices.

3.2 Migration and population: the Demographic Projection Model (DPM)

The accession of the CEECs to the EU is likely to have a significant impact on the conditions of migration. The free movement of workers is defined by Art. 39 (*ex* Art. 48) of the EC Treaty and is one of the fundamental liberties granted under Community law. As described by the DG for Economic and Financial Affairs in a document on enlargement, 'indeed, given that barriers to trade, FDI and other capital movements have already been largely removed, the free movement of persons and workers constitutes the probably most significant dimension in economic integration to change after accession compared to the status quo' (European Commission, ECFIN, 2001, p. 40). Not surprisingly, a debate on the consequences of potential migration has provoked the fear in many countries that the increase in EC populations due to Eastern labour flows may lead to a deterioration of the labour-market position of the local workforce and to wage reduction and job losses. In response, several proposals have been put forward in order to introduce a flexible system of transitional arrangements such as those applied at the accession of Greece, Portugal and Spain. These concerns are particularly acute in countries which are likely to be net recipients of migratory flows, such as Germany and Austria.

Numerous studies have been made on the impact of post-enlargement labour migration generally analysing the problem with reference to a set of factors including income differentials, the situation of the labour market,

economic expectations and demographic trends in the CEECs. The forecasts vary according to the methodology used and the underlying assumptions made.[8] After accession, the early annual flows from the CEEC-10[9] are estimated at around 120 000 workers (or 335 000 persons) in the oft-quoted study by the European Integration Consortium (2000). This projection declines until the end of the decade to 50 000 workers (or 145 000 persons). Following the assumptions implicit in the model, around two-thirds of the annual flow will be absorbed by Germany, whilst one-tenth will be accounted for by Austria, the second highest recipient. Despite the disparities in per capita income and wages between the EU-15 and the CEECs, recent immigration from these countries to the EU has been very low. In recent years, the emigration flows from CEECs have displayed a downward trend. The nature of these flows has altered and are now characterized principally by short and frequent movements both from East to West and between the CEECs themselves.[10] Another relevant factor for migration is the dynamics of demographic trends both in the host and source countries. As shown in Table 8.7, demographic projections for the CEECs have characteristics similar to most Western countries: population decline and population ageing.

Our model includes a well-elaborated Demographic Projection Model (DPM). The role played by DPM is to produce projections of Italian population by age and gender (Bardazzi, 2001). As with any other demographic model,

Table 8.7 Demographic projections for the CEECs, Italy and the EU

	Population (thousands)		*Difference*		*Percentage aged 60 or over*	
	2000	*2050*	*Absolute*	*Percentage*	*2000*	*2050*
Poland	38 671	33 004	−5 667	−14.7	16.6	35.6
Slovenia	1 990	1 569	−421	−21.2	19.2	42.4
Czech Republic	10 269	8 553	−1 716	−16.7	18.4	40.1
Hungary	10 012	7 589	−2 423	−24.2	19.7	36.2
Estonia	1 367	657	−710	−51.9	20.2	35.9
Sub-total	64 309	53 422	−10 887	−16.9		
Romania	22 480	18 063	−4 417	−19.6	18.8	34.2
Bulgaria	8 099	5 255	−2 844	−35.1	21.7	38.6
Slovakia	5 391	4 948	−443	−8.2	15.4	36.8
Latvia	2 373	1 331	−1 042	−43.9	20.9	37.5
Lithuania	3 501	2 526	−975	−27.8	18.6	37.3
Sub-total	41 844	32 123	−9 721	−23.2		
Total CEEC	106 153	85 545	−20 608	−19.4		
Italy	57 536	44 875	−12 661	−22.0	24.1	42.3
European Union*	375 276	331 307	−43 969	−11.7	21.9	35.3

Source: United Nations (2003), except for * from United Nations (2000).

DPM is tailored to generate medium- to long-term projections. DPM relies upon scenarios concerning fertility rates by age, mortality rates from one age to the next, and net immigration by age and gender. The hypothesis regarding net immigration is the most unpredictable of the components of population projections and is the one to be modified if we believe that enlargement will change the migrant flow from CEECs to Italy. The demographic projections produced by DPM are then used in INTIMO to model private consumption (the system of demand includes the age structure of population), the labour market (demographic evolution changes the labour force), and government expenditure (health expenses and pensions clearly depend on the age structure of the population).

4 Simulation scenarios for EU enlargement

In April 2003, the European Parliament voted in favour of the accession to the EU of ten CCs – Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, the Slovak Republic and Slovenia – with which accession negotiations were concluded on December 2002.[11] Parliament also welcomed the statement made at the Copenhagen European Council that the EU should aim to admit Bulgaria and Romania by 2007 provided these countries continue with modernization and reform and comply with the Copenhagen criteria. On 16 April the Accession Treaty was signed at a special meeting in Athens. Membership was constitutionally ratified by each CC, the new Member States joining the EU on 1 May 2004.

These historic events have changed rapidly the overall framework of EU enlargement. This chapter describes a study, funded by the European Commission in 2001, which investigates the costs and benefits for Italy after enlargement. At the time, the accession negotiations were far from being concluded and neither the number of new Member States nor the accession date were known. Although the simulation scenarios may have been modified by the historic events, our methodological approach and empirical results may still be significant and may be applied in future alternative scenarios.[12]

4.1 The 'baseline' scenario

The baseline scenario refers to the future economic performance of the domestic economy without EU enlargement. The design of this reference forecast requires us to make assumptions about some exogenous variables, described below, to provide a credible path for 'business-as-usual' growth. The GDP growth in the CCs is assumed to follow the average rate of growth for other countries in the system. In other words, we assume that the CCs grow at a pace close to that of the main industrialized countries, that is, Western Europe, the United States, Canada and Japan. In fact, one can say that the EU support and assistance to the CC in the past decade has already

produced higher growth rates and that this catching-up process would have lost steam if the accession process had been stopped.

Each country model, linked by the Bilateral Trade Model, produces sectoral price projections. For BTM, these are adjusted by assumed exchange rates to produce indexes of effective prices.[13] At present BTM details exchange among these individual countries (14) and two regions, 'other OECD', and 'the rest of the world'. Industry-specific trade-weighted averages of the country prices are then taken as the prices of the two remaining regions. Since all CC fall into one or the other of these two regions, the basic assumption of the baseline scenario is that these countries have 'average' prices relative to those in the countries of the model, where 'average' is the average over the 14 countries examined. As mentioned above, BTM distributes the imports of each country among supplying countries. This means that each country model endogenously computes (sectoral) import requirements; BTM converts these requirements into the exports of the other countries. Symmetrically, each country model in the system receives from BTM its (sectoral) exports as the sum of the import requirements of the other countries. The amount of (sectoral) exports of each country will vary according to the shares of imports captured from each of the other countries in the system. Hence, exports do not belong to the set of the scenario variables; indeed (sectoral) exports of each country in the model system are endogenous.

As for Italian government expenditure, we assume that the Stability and Growth Pact, which imposes budgetary discipline and improvement on the budgetary procedure, will force national governments to limit their expenditure to a growth rate approximately equal to, or slightly below, that expected for GDP. Considering the volume of the Italian public debt, a low profile growth in government expenditure is realistic.[14]

INTIMO is a dynamic multisectoral econometric model. The other models in the system, such as BTM, are also fully dynamic. Hence, the evaluation of different scenarios is carried out year-by-year over a future period. Indeed, different shocks may take place in different years in the future, and their effects need to be evaluated year-by-year over the period of simulation which is 2001–10.

4.2 The simulation scenarios

4.2.1 Preliminary analysis

Alternative scenarios have been designed and tested in order to analyse the economic implications of enlargement on the Italian economy. Complexity, plausibility and feasibility of simulations can vary and be influenced by the structure of the model at hand. In our case, we have decided to fully exploit the features of our system of models linked by international trade flows. Therefore, we have tested some preliminary simulations gradually approaching our final and comprehensive scenario. This analysis has helped us to

draw some conclusions about the relative importance of international trade in evaluating the impact of enlargement on an EU Member State. Although many studies produce trade-induced effects emanating from the idea that enlargement is primarily a custom-union issue,[15] these analytical approaches fail to consider the full interdependence of the EU single market by not having a model for bilateral trade flows. The results give the impression that trade effects are trivial for the EU – and for individual Member States – while more relevant for the Candidate Countries. These findings are implicit in a modelling approach where the CEECs are linked either to the EU as a whole or to an individual Member State with an exclusive mutual connection. Therefore, 'estimates of the impact of enlargement for the present EU tend to be limited given its much larger economic size. … For the new member states, the consensus of economists is that the gains are likely to be proportionately much larger, reflecting the fact that 70 per cent of their exports go to the present EU (only 4 per cent of EU exports currently go to the new member states) and that their economies are far smaller' (Kok, 2003, p. 36). Our simulations show a significant trade effect on Italy which is mainly due to the economic interrelations with other EU Member States and to enlargement through international trade flows.

As for the migration problem, it is important to note that the number of legal foreigners residing in Italy and coming from CCs only amounts to 8.35 per cent of the total number of resident migrants. Moreover, in Poland and Romania, the most populated Candidate Countries, the expected population reduction by the year 2050 will be approximately 15 and 20 per cent, respectively (see Table 8.7). If these projections are confirmed in the future, applicants will no longer have a positive demographic surplus to export. In addition, the 'catching-up process' will narrow income disparities between the CCs and EU-15 members and will increase labour demand in the Candidate Countries, thus absorbing a higher proportion of the workforce. To summarize, in the past Italy has not been a migratory pole for Eastern migrants, given its geographical location and prevailing economic conditions, and there is little reason to believe that this situation will change dramatically in the near future. Therefore, in our study we assume that there will be no change in migration flows in the simulation scenarios, based on the hypothesis that any potential variation in the number of migrants will be so low as to leave the labour market and the economy as a whole largely intact. Then, in our demographic projection model the assumption about net migration is maintained as in the baseline scenario.

A first group of simulation scenarios (whose detailed results are shown in Bardazzi and Grassini, 2003) assumes that CCs' GDP will grow by 2 per cent more annually, compared to the baseline. The rapid growth of the applicant countries' GDP growth should be considered an appropriate assumption, as economic integration caused by enlargement will mean that the newcomers' economies will be pulled towards EU levels of prosperity, resulting in a faster

GDP rate of growth for over another decade. Since we do not have models for the CCs, nothing can be said about the shifts in the composition of their final demand. On the resource side, however, we assume that imports will grow as rapidly as GDP, so that their resource structure remains unchanged. Higher levels of imports from the CCs will mean higher exports for the countries in the model system. This preliminary exercise does not include any change of prices due to the reduction of tariffs. When we consider only the direct effect of the CC increase in imports on the Italian economy – as an increase of Italian exports to these countries – no account is taken of the enlargement effects on other EU Member States. In this case the estimated increase in Italian GDP – compared to the baseline scenario – is very modest; and falls from 0.2 to 0.13 along the simulation interval. We can assume, however, that changes in CC imports have implications for all economies and that this in turn affects each country's outputs, and therefore the imports from every other country. Hence, Italian exports are determined by the changes in the imports demanded by the countries in the system. Our results highlight the relevance of these indirect effects of the EU enlargement on Italy: the estimated increase in GDP is roughly twice the previous one at the beginning of the simulation period and develops smoothly up to a maximum of a factor of about 2.5 at the end of the horizon. This result shows that the trade-induced effects of EU enlargement cannot be analysed only in terms of geographical distance with the CEECs and bilateral trade flows *vis-à-vis* to the future Member States: for more peripheral countries – such as Portugal – indirect effects generated through trade flows with Germany may still be significant.

4.2.2 Deepening the specialization of trade

In the 1990s, the CCs overcame the deep crisis which occurred after the crash of the socialist economies. During this decade, trade between the EU and these countries increased as the 'catching-up' of the applicants took off (see Table 8.3). When the transition began, the import–export composition was concentrated on a small bundle of goods. During the transition, these commodities have maintained and even increased their importance in trade with the EU countries, accounting for about 60 per cent of the total commodity trade.

Since this specialization occurred during the period of reconstruction towards market-oriented economies, we may well assume that this specialization will persist in the near future, that is, over the time span of the present study. Indeed, this trend towards specialization may well be the result of the good use that applicants have made of their negotiations with the EU and programmes such as PHARE. Other direct advantages may be generated by their access to the Structural Funds; indirect advantages, coming from FDI flows, are expected to remain substantial if the CEECs continue to focus on integration with the countries of Western Europe. All these elements generate investments, and the concentration on trade may therefore be related to

the accumulation process. In fact, many of the items listed in Table 8.5 relate to equipment or its production.

Hence, we have investigated the effects of changes in the CC import structure on the Italian economic structure, assuming a further deepening of trade specialization stimulated by foreign investment and sub-contracting. This simulation produces an increase in Italian exports and imports that shows the highest difference with respect to the baseline scenario, a divergence of over 1 per cent increase in exports. The increase in imports is much lower, at about 0.6 per cent. The trade balance produces an increase in GDP close to 0.5 per cent compared to the baseline; consequently, the accelerator pushes investments up and the increase in disposable household income – which implies an increase in household consumption – adds another stimulus to GDP growth. Therefore, Italy would gain from a deeper specialization of CC trade structure as the relevant partner in trading machinery, equipment and motor vehicles.

4.3 The scenarios removal of tariffs and NTBs

4.3.1 CCs and the Single Market[16]

So far, our analysis has ignored the removal of trade and non-trade barriers following the EU enlargement to the East. From a modelling perspective, this means linking the CC growth effects and trade specialization as assumed in the previous section with a change in relative prices due to the removal of barriers.[17]

The structure of (residual) tariffs for agricultural products imposed by the EU on imports from the CC and by these countries on imports from EU have been estimated using data on customs duties to an 8-digit level of detail. To design this scenario, these customs duties for CCs have been approximated by the import-weighted average of tariff rates set by the Czech Republic, Hungary and Poland.[18] These computed tariff rates are shown in Table 8.8.

Since the effect of the elimination of EU tariffs on CC products is equivalent to a reduction in import prices, we model such an effect as a reduction in the relative prices of Italian imports in the import equation of the Bilateral Trade Model.[19] This allows us to evaluate the effect, at the sectoral level, of the removal of the remaining tariffs. It is worth noting that we do not consider the potential effect on Italian exports of the removal of tariffs by CEECs on products originating in Italy. *Therefore, the potentially negative impact on Italian output from accession is likely to be overestimated by our simulation.*

NTBs are impediments to trade such as: (a) quantitative restrictions; (b) price control measures; (c) import licensing; (d) different standards; and (e) other technical requirements and customs procedures. It is commonly

Table 8.8 Average tariff rates on Italian trade with the Czech Republic, Hungary and Poland (*percentages*)

	On exports to the Three	*On imports from the Three*
Unmilled cereals	36	21
Fresh fruits & vegetables	12	13
Other crops	3	6
Livestock	17	12
Fishery	5	9
Meat	32	21
Dairy products and eggs	24	64
Preserved fruits, vegetables	24	14
Preserved seafood	28	16
Vegetable, animal oils, fats	8	1
Grain mill products	18	31
Bakery products	24	16
Sugar	35	18
Cocoa, chocolate, etc	25	11
Food products n.e.c.	17	7
Prepared animal feeds	6	1
Alcoholic beverage	34	6
Non-alcoholic beverage	34	6
Tobacco products	31	29
Paints, varnishes, lacquers	1	1
Scrap, used, unclassified	1	0
Average of above	20	14

Source: EU Market Access Database and TARIC Consultation.

believed that the effect of the removal of NTBs should be substantial. Unfortunately, the available information on NTBs is mostly qualitative, and it is difficult to translate it into a quantitative index useful for investigating the impact of NTBs on trade. Therefore it is not uncommon to model the effect of NTBs by relying solely on judgement. For instance, Baldwin, Francois and Portes (1997) guess that the elimination of NTBs between the EU and CCs could be equivalent to a 10 per cent reduction in trade costs, that is, a 10 per cent reduction in customs duties. Keuschnigg and Kohler (1999) follow the same approach, but opt for a more conservative 5 per cent.

Although our analysis relies on the same kind of judgement as Baldwin, Francois and Portes (1997), our study is innovative in two respects. First, we provide estimates for two different scenarios in order to evaluate the sensitivity of trade flows, and thus present two alternative hypotheses on the effect of the removal of NTBs. Secondly, we take into account that the incidence of NTBs differs across sectors and thus distinguish between three different *ad valorem* equivalents of NTBs so as to develop the full potential of our sectoral model.

To evaluate the extent to which EU imports are subject to NTBs in the various sectors, we use 'trade coverage ratios' for each EU sector. Coverage ratios are provided by Wang (2000) who uses information on NTB indicators contained in the Trade Analysis and Information System (TRAINS) database of UNCTAD. TRAINS provides information on the effect of NTBs for each Harmonized System item (6-digit level).[20] Depending on the corresponding 'trade coverage ratios' we distinguish between three types of product sector, heavily protected, mildly protected and unprotected by NTBs (see Table 8.9).

Table 8.9 NTB coverage ratios by product group

Heavily protected product sectors		*NTBs*
2	Fruits and vegetables	34
6	Cotton	53
7	Wool	27
12	Coal	52
18	Meat	19
27	Food products n.e.c.	64
29	Alcoholic beverages	20
32	Yarns and threads	81
33	Cotton fabrics	52
34	Other textile products	88
36	Wearing apparel	88
49	Synthetic resins, man-made fibres	79
57	Product of coal	52
65	Basic iron and steel	10
67	Aluminium	50
Mildly protected product sectors		*NTBs*
3	Other crops	1
10	Fishery	6
28	Prepared animal feed	3
35	Floor coverings	1
47	Basic chemicals	3
52	Soap and toiletries	2
53	Chemical products, n.e.c.	1
58	Tyres and tubes	1
59	Rubber products, n.e.c.	1
73	Metal containers	5
75	Hardware	5
93	Radio, TV, phonograph	1
94	Other telecom equipment	1
106	Motor vehicles	2
107	Motorcycles and bicycles	2
108	Motor vehicle parts	2

Source: TRAINS and Wang (2000).

4.3.2 The two scenarios

To estimate the impact of the reduction of the NTBs imposed by the EU we perform two alternative simulations:

(1) A first *conservative* scenario (see Keuschnigg and Kohler, 1999) assumes that the removal of NTBs is equivalent to the abatement of a 10 per cent tariff rate in the heavily affected sectors and a 5 per cent tariff rate in the mildly affected sectors.
(2) A second *generous* scenario (see Baldwin, Francois and Portes, 1997) assumes that all sectors are to a certain extent protected by NTBs, whose effect is on average equivalent to a 10 per cent tariff rate. This scenario assumes that the removal of NTBs is equivalent to the suspension of tariffs equivalent to 15, 10 and 5 per cent in the heavily, mildly and (apparently) unprotected sectors, respectively.

In the following Section we examine the effect of removing trade protection in the form of both tariffs and NTBs. In order to highlight the negative impact of trade liberalisation on some sectors of the Italian economy, we present such effects as deviations from simulation with the specialisation of CCs.

5 The impact of the enlargement on structural changes in the Italian economy

Over time all economies face structural changes which can be detected in changes in the composition of aggregated economic variables. The sectoral composition of any national economy a century ago is very different from its present structure. The transition from the old to the new structure may be a relatively smooth process. The mutation of an economic sectoral structure is determined by different and changing sectoral rates of growth. According to the designed scenarios, the enlargement modifies the sectoral composition of final demand as well as the composition of (sectoral) resources. Clearly, these changes are reflected in the rates of growth of sectoral output. Table 8.10 reports the most rapidly growing sectors for the years 2001–03 and 2008–10 for the Baseline. Then, the output growth rates for the scenario of 'Specialisation of CCs' are compared with the case of the 'Removal of Tariffs' preserving the NTBs for the years 2008–10 (Table 8.11). Finally, the complete removal of tariffs and NTBs is simulated with the cases of the 'conservative' and the 'generous' scenario and results for selected sectors are presented in Table 8.12 for 2008–10.[21]

In Table 8.10, the Baseline is represented at the starting point, period 2001–03, and at the end of the horizon, period 2008–10. At a glance, we can see that the rates of growth mark a general reduction for the top 25 sectors at least. 'Building and construction' is the sector with the highest growth rate for the period 2001–03, but falls to 9th position in the years 2008–10,

Table 8.10 Structural changes in the Baseline Scenario. Top 25 product sectors in descending order with respect to the rate of output growth

Baseline average output rates of growth in years 2001–03		*Baseline average output rates of growth in years 2008–10*	
27 Building and construction	6.272	26 Other manufacturing industry	6.185
11 Agricultural and industrial machinery	6.064	15 Other transport equipment	4.740
10 Metal products	5.229	22 Leather goods and footwear	2.865
15 Other transport equipment	4.908	34 Communication	2.757
7 Primary metals	4.704	39 Private health services	2.380
13 Electrical goods	4.368	37 Real estate	2.239
8 Stone, clay and glass products	4.207	30 Hotels and restaurants	2.146
12 Office, precision and optical instruments	3.925	7 Primary metals	2.128
34 Communications	3.822	27 Building and construction	2.108
25 Plastic and rubber products	3.743	31 Inland transport services	2.065
31 Inland transport services	3.719	35 Banking and insurance	1.965
26 Other manufacturing industry	3.706	11 Agricultural and industrial machinery	1.885
23 Timber, wood products & furniture	3.654	38 Private education services	1.856
39 Private health services	3.216	40 Recreation and culture	1.741
35 Banking and insurance	3.201	12 Office, precision and optical instruments	1.736
36 Other private services	3.198	33 Auxiliary transport services	1.681
33 Auxiliary transport services	2.911	23 Timber, wood products and furniture	1.608
14 Motor vehicles	2.907	8 Stone, clay and glass products	1.557
37 Real estate	2.883	19 Alcohol and non-alcoholic beverages	1.515
38 Private education services	2.738	36 Other private services	1.470
24 Paper and printing	2.659	24 Paper and printing	1.395
30 Hotels and restaurants	2.505	25 Plastic and rubber products	1.350
29 Wholesale and retail trade	2.297	10 Metal products	1.319
40 Recreation and culture	2.121	29 Wholesale and retail trade	1.087
19 Alcohol and non-alcoholic beverages	1.892	18 Other foods	1.077

Table 8.11 Structural changes in the specialization of CCs and tariff-removal scenarios. Top 25 product sectors in descending order with respect to the rate of output growth

Specialization of CCs *average output rates of growth in years 2008–10*		*Tariff removal* *average output rates of growth in years 2008-10*	
26 Other manufacturing industry	6.277	26 Other manufacturing industry	6.343
15 Other transport equipment	5.180	15 Other transport equipment	5.366
11 Agricultural and industrial machinery	4.129	11 Agricultural and industrial machinery	3.695
34 Communications	3.154	7 Primary metals	3.121
7 Primary metals	3.126	34 Communications	3.112
22 Leather goods and footwear	2.701	22 Leather goods and footwear	2.817
31 Inland transport services	2.651	31 Inland transport services	2.595
39 Private health services	2.599	39 Private health services	2.577
35 Banking and insurance	2.519	37 Real estate	2.472
37 Real estate	2.498	35 Banking and insurance	2.469
10 Metal products	2.495	12 Office, precision and optical instruments	2.456
24 Paper and printing	2.430	30 Hotels and restaurants	2.361
30 Hotels and restaurants	2.382	38 Private education services	2.276
25 Plastic and rubber products	2.365	10 Metal products	2.241
38 Private education services	2.327	24 Paper and printing	2.232
12 Office, precision and optical instruments	2.322	25 Plastic and rubber products	2.190
33 Auxiliary transport services	2.217	33 Auxiliary transport services	2.157
13 Electrical goods	2.167	23 Timber, wood products and furniture	2.036
36 Other private services	2.088	36 Other private services	2.024
40 Recreation and culture	2.055	40 Recreation and culture	2.022
27 Building and construction	1.983	27 Building and construction	2.011
23 Timber, wood products and furniture	1.811	8 Stone, clay and glass products	1.885
19 Alcohol and non-alcoholic beverages	1.771	19 Alcohol and non-alcoholic beverages	1.823
8 Stone, clay and glass products	1.753	13 Electrical goods	1.781
14 Motor vehicles	1.606	29 Wholesale and retail trade	1.531

Table 8.12 Structural changes in the tariff-removal and NTBs scenarios. Top 25 sectors in descending order with respect to the rate of output growth

Conservative scenario (0–5–10) average output rates of growth in years 2008–10		*Generous scenario (5–10–15) average output rates of growth in years 2008–10*	
26 Other manufacturing industry	6.330	26 Other manufacturing industry	6.311
15 Other transport equipment	5.332	15 Other transport equipment	5.266
11 Agricultural and industrial machinery	3.711	11 Agricultural and industrial machinery	3.995
7 Primary metals	3.126	34 Communications	3.183
34 Communications	3.125	7 Primary metals	3.180
22 Leather goods and footwear	2.826	22 Leather goods and footwear	2.785
31 Inland transport services	2.607	31 Inland transport services	2.682
39 Private health services	2.586	39 Private health services	2.629
37 Real estate	2.483	35 Banking and insurance	2.536
12 Office, precision and optical instruments	2.482	37 Real estate	2.530
35 Banking and insurance	2.477	10 Metal products	2.492
30 Hotels and restaurants	2.379	12 Office, precision and optical instruments	2.435
38 Private education services	2.288	30 Hotels and restaurants	2.431
10 Metal products	2.277	38 Private education services	2.350
24 Paper and printing	2.231	24 Paper and printing	2.347
25 Plastic and rubber products	2.218	25 Plastic and rubber products	2.333
33 Auxiliary transport services	2.168	33 Auxiliary transport services	2.236
23 Timber, wood products and furniture	2.065	27 Building and construction	2.113
36 Other private services	2.036	36 Other private services	2.111
27 Building and construction	2.035	13 Electrical goods	2.090
40 Recreation and culture	2.032	40 Recreation and culture	2.083
8 Stone, clay and glass products	1.903	23 Timber, wood products and furniture	2.000
19 Alcohol and non-alcoholic beverages	1.835	8 Stone, clay and glass products	1.900
13 Electrical goods	1.825	19 Alcohol and non-alcoholic beverages	1.852
29 Wholesale and retail trade	1.545	29 Wholesale and retail trade	1.616

while 'other manufacturing industry' rises from 12th position to the top of the list at the end of the simulation period. So 'real estate' from the period 2001–03 to the period 2008–10 rises from the 19th to the 6th position. In Table 8.11, in the 'Specialisation of CCs' scenario, 'building and construction' continues its downward trend, ranking 21st in the years 2008–10. This sector is stimulated by investments, and throughout the decade we witness a drop in the growth rate of investment so that consequently 'building and construction' drops towards the bottom of the list together with 'stone, clay and glass products' which supplies intermediate input to 'building and construction'. The growth of 'metal products' and 'electrical goods' slows down while some service sectors ('communication', 'inland transport services', 'banking & insurance', 'private health services', 'hotels and restaurants') have risen towards the top of the list. The sector of 'motor vehicles' halves its growth rate, dropping to last position. 'Other manufacturing industry' and 'other transport equipment', which occupy the first and second place respectively with growth rates of around 6 per cent annually, appear to be the winners in the anticipated structural change.

Table 8.11 reports the average rates of growth of sectoral output respectively for the 'Specialisation of CCs' scenario and the 'Removal of tariffs' scenario for the years 2008–10. The 'Removal of tariffs' scenario is based on a reduction on import prices from CC for those sectors where tariffs still apply. Although the reduction in import prices due to the removal of residual tariffs only concerns a small group – the 'agricultural' and 'food industry' sectors – directly, we can also detect changes in the ranking of a wide range of industries. These changes are modest, but noticeable; for example, 'electrical goods' report a rate of growth reduction of 0.4 per cent.

The structural changes in the 'removal of trade barriers' scenarios are shown in Table 8.12. The conservative scenario is on the left side and the generous is on the right side. We see many changes in the two lists, but there is no significant reshuffling. Incidentally, if we consider the highest and the lowest rates of growth in each list, we can say that the range of rates of growth narrows as we move from the conservative to the generous assumption. This allows us to say that the higher the reduction of import prices due to the removal of trade barriers, the lower the extent of structural change. In our simulation experiments we can also deduce that the intensity of structural change is correlated with the performance of the economy by looking at the output or at GDP.

6 Final remarks

The impact of the European enlargement on Italy has been evaluated by disentangling the scenarios so that we can see separately the effects of the new prosperity of the applicants and the removal of persisting trade barriers.

The effect of the new prosperity of the applicants has been viewed with regard to the increase of their imports from the EU and not in terms of the effect of the enlargement inside the CEECs' economies. This is characteristic of all studies of Enlargement which are viewed exclusively from one side, the member state.

In the first place, the effect of an increase in imports to the CEECs from the EU has been simulated considering the case of (a) Italy with respect to the CEECs, and (b) the EU-15 with respect to the CEECs; and then going on to focus on the specific effect of (b) on the Italian economy. From this comparison we learn that the effect of the enlargement on the Italian economy, which occurs indirectly through its impact on the other European economies, is about the same (in size) as the direct effect. Furthermore, a concentration of the CEEC imports (as well as exports) in a small group of commodities reveals a trend towards 'specialization' which indeed affects all EU countries. This evolution of the CEEC demand for imports from the EU-15 adds a further modest but clear benefit to the Italian economy.

Tariff barriers, which mainly regard agricultural and food industry commodities, have been estimated at a very detailed level and affect a total of 22 product sectors (out of 120 in the BTM), according to the commodity detail of the Bilateral Trade Model used here. As regards the simulation results for the removal of non-tariff barriers, two alternative scenarios have been formulated.

Hence, at the macroeconomic level, the cumulative impact on the Italian economy of the new prosperity of the applicants (measured as an increase in import growth rates), and the removal of tariffs and non-tariff barriers is clearly positive. Despite the generally positive impact of enlargement, some sectors are better off, whilst others do not benefit very much from the reshaping of the EU production structure, and others are directly hit by the reduction of import prices, that is, 'agriculture' and 'food industries', and suffer a clear, albeit temporary, drop in competitiveness. If we examine sectoral performance, we find that 'milk and dairy products' suffered an upsurge of (foreign) competitiveness, thus forfeiting the gains generated by the expansion of the CEECs' economies and subsequently falling during recession. The sector 'other manufacturing industry' does not appear to have been much affected by the enlargement and remains a highly dynamic sector. Other sectors tend to decelerate following the removal of trade barriers, but subsequently regain a good pace of growth. Sectoral growth paths are not steady over time, with accelerations, decelerations, recessions and recoveries which lead to different 'final' scores. Table 8.13 presents an evaluation of enlargement in two columns respectively headed 'average', which gives the percentages of the difference between the cumulated outputs of the 'generous scenario' and the cumulated outputs of the 'baseline' in the interval 2001–10, and '2010' which reports percentages relative to the difference of total outputs in the last year examined. This second column reflects our preference

Table 8.13 Percentage differences in sectoral output between 'generous' scenario and baseline

Sectors	*Average 2001–10*	*2010*
Total	**2.5**	**4.9**
Agriculture, forestry and fisheries	0.7	1.6
Coal, oil and products	2.4	3.7
Electricity, gas and water	2.2	4.2
Manufacturing	**3.9**	**7.7**
Primary metals	4.1	8.2
Stone, clay and glass products	1.4	2.5
Chemical products	1.8	3.8
Metal products	5.4	10.4
Agricultural and industrial machinery	9.1	18.5
Office, precision and optical instruments	3.9	7.1
Electrical goods	7.2	13.8
Motor vehicles	8.2	17.4
Other transport equipment	2.0	4.0
Meat and preserved meat	1.0	1.9
Milk and dairy products	−0.3	−0.2
Other foodstuffs	1.1	2.2
Alcohol and non-alcoholic beverages	1.1	2.3
Tobacco	−1.5	−3.0
Textiles and clothing	0.9	2.1
Leather goods and footwear	1.4	2.2
Timber, wood products and furniture	1.5	2.9
Paper and printing	3.4	7.1
Plastic and rubber products	4.8	9.2
Other manufacturing industry	1.1	1.9
Building and construction	0.3	0.2
Services	**2.1**	**4.0**
Recovery and repair services	2.6	5.4
Wholesale and retail trade	2.3	4.5
Hotels and restaurants	1.4	2.6
Inland transport services	2.7	5.3
Sea and air transport services	1.4	2.9
Auxiliary transport services	2.4	4.7
Communications	2.8	3.8
Banking and insurance	1.4	4.8
Other private services	2.3	5.4
Real estate	1.2	2.6
Private education services	1.6	4.4
Private health services	0.1	2.2
Recreation and culture	3.2	3.0

for analysing the simulations by 'level' rather than 'rate of growth' of output; the rate of growth is fully satisfactory for short-term analysis where a single period rate of growth contains all the information about the path for the time interval. We see that, in general, the average values are lower than those measured in '2010'. This is because the 'average' contains the structural shocks generated by the removal of trade barriers. The column '2010' gives a good picture of the effects of the enlargement according to the scenarios considered. In particular, the real effects of the enlargement are measured by cumulating the annual gains (or losses) in order to obtain a more accurate impression of the impact in a given year. Although a number of studies conclude that the impact of the enlargement (on the EU-15 countries, groups of countries or single countries) is expected to be modest, we should stress that if the impact turns out to have a given sign, what matters is its cumulative effect over time. In the case of Italy a relatively substantial expansion will affect some sectors ('agriculture and industrial machinery', 'electrical goods', 'motor vehicles, 'metal products'), whilst others (mainly 'food industries' and 'tobacco') will lose their relative importance. A cumulative output rate of growth of over 10 per cent (at the end of the 2000s) will indicate a sizeable sectoral impact.

A multisectoral model is particularly useful when investigating the impact of our scenarios on the structure of Italian industry. First, the anticipated increase in exports generated by the demand of the CEECs in their process of 'catching-up' exerts a clear Keynesian demand effect so that all industries benefit in varying degrees in terms of output growth. Clearly, the removal of tariffs and NTBs interferes with these results. In order to evaluate such interference, we must consider that the removal of trade barriers increases the competitiveness of imports from the CEECs. These imports, which constitute part of the resources, will be used to feed intermediate and final consumption. If we examine import composition, we find that some imports tend to feed intermediate consumption whilst others figure directly in final consumption, such as for example, goods produced for household consumption. Hence, the effect of more competitive imports may vary across sectors.

Figures 8.1–8.6 highlight the impact of the new prosperity of the CEECs represented in the 'Specialization of CEECs' scenario and the changes due to the removal of trade barriers in the 'conservative' and 'generous' scenarios. In each sector, the output index ($2001 = 1$) shows higher growth in the 'Specialization of CEECs' scenario, confirming the positive benefit of the Keynesian effect due to the increase in imports for the CEECs. For 'agriculture, forestry and fisheries' (Figure 8.1), the removal of trade barriers has a negative impact on sectoral performance in terms of output, particularly when moving from the 'conservative' to the 'generous' scenario. In 'milk and dairy products' (Figure 8.2), the removal of trade barriers is even more severe; all the benefits of expansion, stimulated by higher exports, are lost, and sectoral output falls below the 'baseline' track until the end of the period when it once again

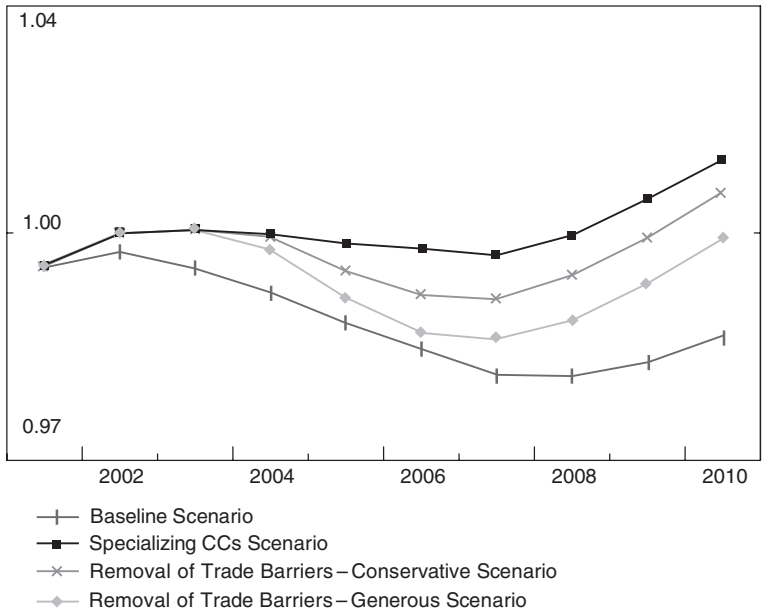

Figure 8.1 1 Agriculture, forestry, fishery: output index

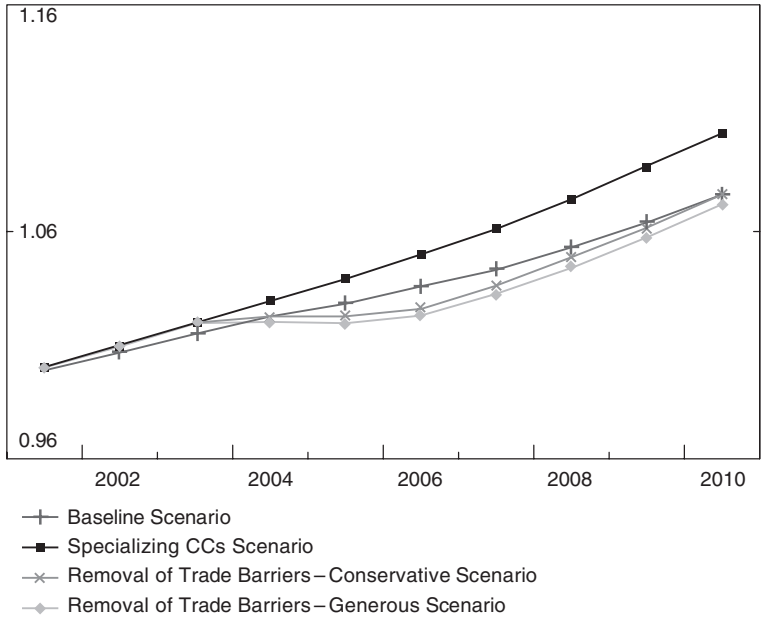

Figure 8.2 17 Milk and dairy products: output index

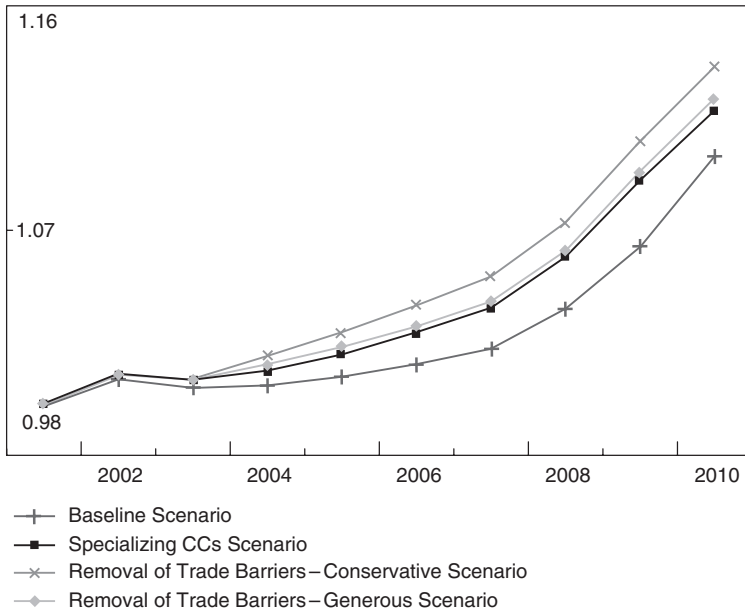

Figure 8.3 22 Leather, shoes and footwear: output index

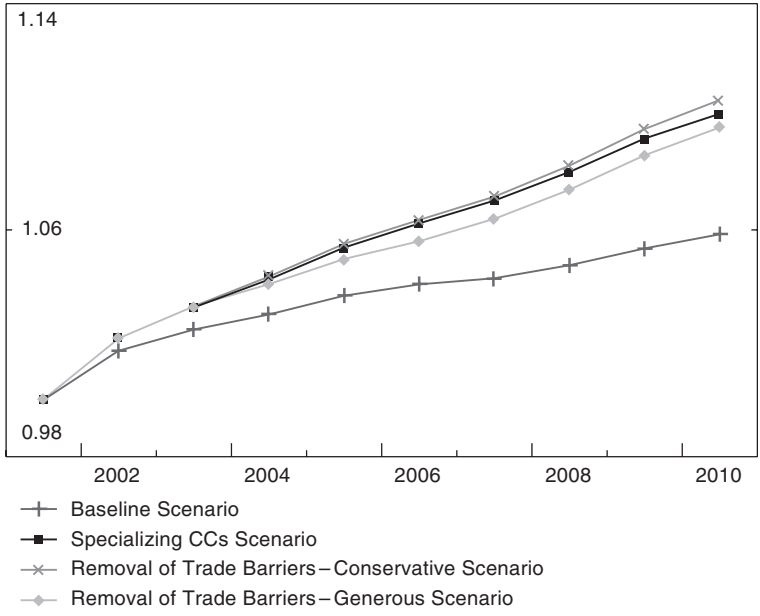

Figure 8.4 9 Chemical products: output index

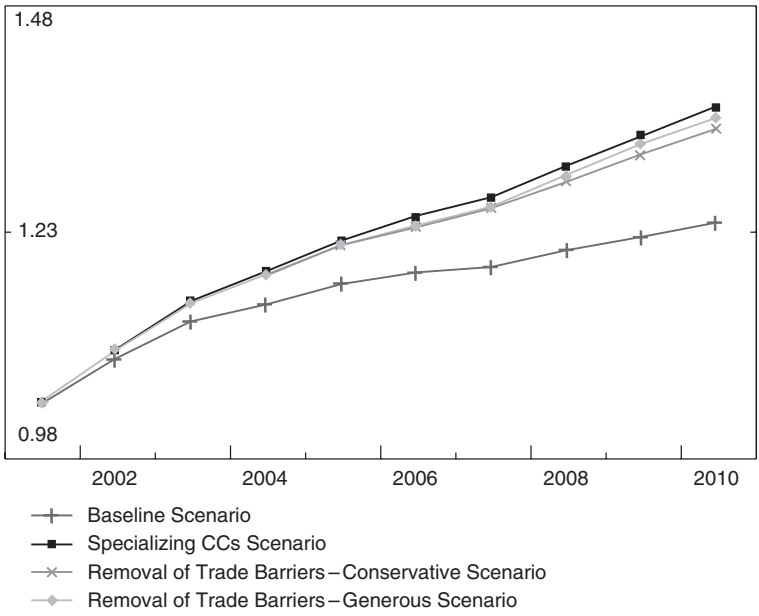

Figure 8.5 10 Metal products: output index

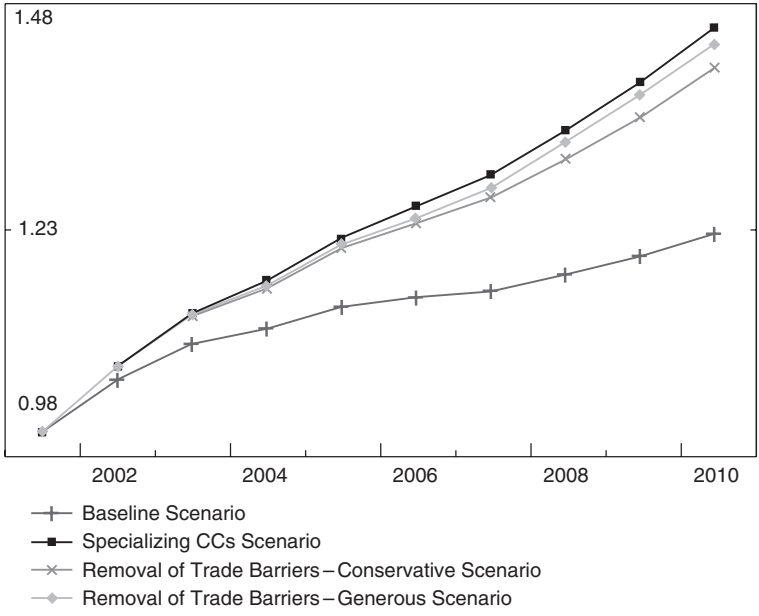

Figure 8.6 11 Agricultural and industrial machinery: output index

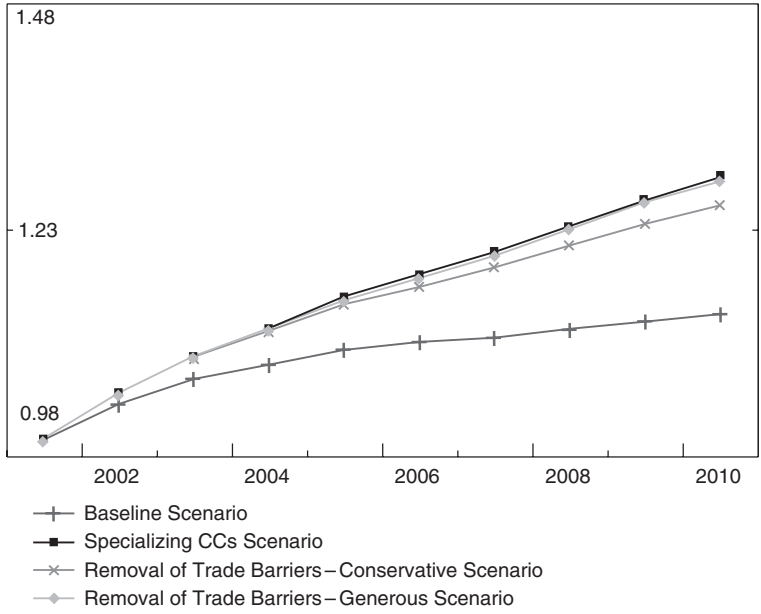

Figure 8.7 13 Electrical goods: output index

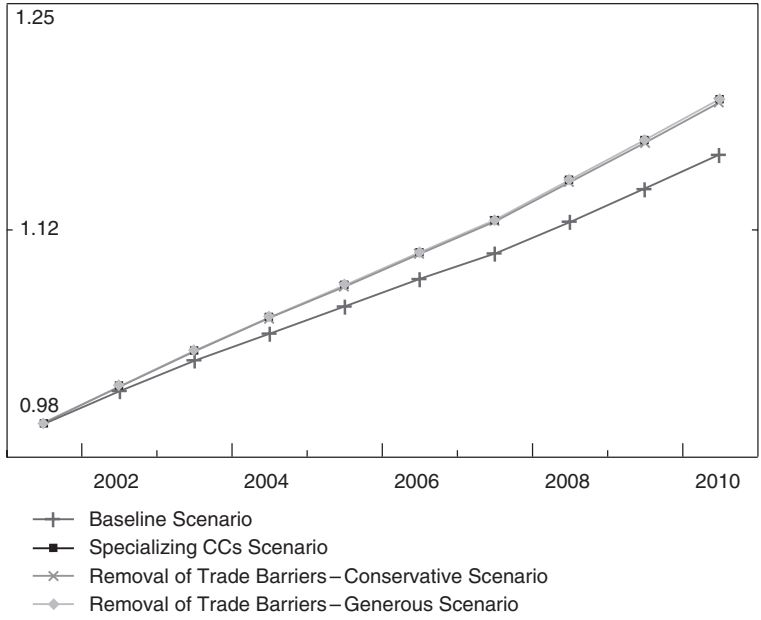

Figure 8.8 40 Recreational and cultural services: output index

approaches the 'baseline' level. In contrast, the removal of trade barriers improves the sectoral performance for 'leather, shoes and footwear' (Figure 8.3); in particular, the 'conservative scenario' stimulates further growth while the 'generous scenario' tends to undermine this stimulus. This means that according to the 'conservative scenario' commodities with reduced import prices generally constitute intermediate consumption for this sector, whilst in the 'generous scenario' the import price reduction is more likely to affect sectoral competition in final consumption products.

In Figure 8.4, the expansion of 'chemical products' is slightly improved under the 'conservative scenario', but clearly deteriorates with the 'generous scenario'. Figures 8.5 and 8.6 illustrate two cases where the removal of trade barriers generates a negative effect which is more severe for the 'conservative' than for the 'generous' scenario. On closer examination, the input structure of these two sectors ('metal products' and 'agricultural and industrial machinery') reveals that those imports absorbed as inputs mainly belong to the group of commodities not covered by the 'conservative scenario'.

The last two Figures (8.7 and 8.8) present evidence of the case where the 'generous scenario' does not modify the performance related to the 'conservative scenario' ('electrical goods') and also presents the case where there is no effect due to the removal of trade barriers ('recreational and cultural services'). The explanation in the case of 'recreational and cultural services' is simple: no imported commodities prove to be relevant for sectoral production, and no imported service competes with it on the final demand side.

In terms of GDP, studies of the impact of Eastern enlargement on a single Member State or on the EU-15 generally conclude that the impact is modest, negligible or has no discernable sign (see e.g., Baldwin, Francois and Portes, 1997; European Commission, ECFIN, 2001). We cannot confirm such conclusions given that they usually are based on analytical tools that are inappropriate for evaluating the sort of effects examined in this study. It should be noted that the process of enlargement entails the evaluation of the pulling of the CEECs' economies, their processes of trade specialization, and the removal of commodity-specific tariffs and trade barriers. This requires a 'meso-economic' approach where the sectoral representation of the economy may help to highlight the structural changes induced by these factors. Underlying macro-variables such as GDP or 'total output' result in changes in the structure of the economy, as can be seen in this study. These changes certainly merit policy makers' attention.

Notes

1. The European Commission has funded several studies on this topic. A recent report by Kok (2003) analyses the EU enlargement from a European point of view addressing the main challenges which this process poses. Other

studies viewing Enlargement from a national standpoint may be found at http://europa.eu.int/comm/budget/financing/enlargement_en.htm.

2. The Inforum work on economic modelling and forecasting is documented at the web site inforumweb.umd.edu.
3. Romano Prodi in his lecture of 10 September 2002 (chapter 2 of this volume) observed that 'depending on the degree of structural reform undertaken, enlargement-induced additional growth for the new members ranges from 1.4 to 2.7 per cent'. In fact, applied studies may differ in their assumptions about expected growth for CCs after accession. Our hypothesis of a growth rate of 2 per cent higher than the EU-15 is somewhat in the middle between a more conservative assumption of about 1.5 per cent above the no enlargement scenario as in Baldwin, Francois and Portes (1997), and a more optimistic scenario of about 2.5 per cent more than the baseline as in European Commission-ECFIN (2001).
4. The United States, Mexico, Canada, Japan, South Korea, China, Taiwan, the UK, France, Germany, Italy, Spain, Austria and Belgium and two areas comprised by the rest of the OECD countries and 'the rest of the world'.
5. There are many economic analyses carried out using Inforum country models. Here we refer to special sessions devoted to Inforum models at the International Conferences on Input-Output Techniques in 1989 (Keszthély, Hungary) and 1998 (New York). Papers presented at the first conference are collected in a special issue of *Economic Systems Research*, vol. 3, no. 1, 1991. Contributions presented at the XII International Conference in New York may be found on the web site www.iioa.at.
6. Here, we do not compare the peculiarities of these kinds of models with those of other macroeconomic or multisectoral models. However, see West (1995) for a synoptic presentation of CGE models, classic input-output models and input-output + econometric models. For a comparison of macroeconomic models see also Almon (1991); see also Monaco (1997) who gives an interesting evaluation of different kinds of macroeconomic multisectoral models from the perspective of a model builder and user.
7. Bardazzi and Grassini (2003) contains a schematic overview of the Italian Multisectoral Model (INTIMO) and of the various behavioural equations.
8. For the summarized results from some of the main studies, see European Commission (2001). One of the most detailed works is a study commissioned by the DG for Employment and Social Affairs, European Integration Consortium (2000).
9. The Czech Republic, Hungary, Poland, Slovenia, Slovakia, Estonia, Latvia, Lithuania, Malta and Cyprus.
10. For a recent report on migration in Central and Eastern Europe, see OECD (2001).
11. This achievement was reached at the Copenhagen European Council (12–13 December 2002).
12. The design of scenarios presented in this section draws heavily on Bardazzi and Grassini (2003).
13. It is assumed that the exchange rates among the key currencies in the baseline as well as in the other scenarios will not vary much over time. The US$/€ exchange rate rises steadily from the present 0.90 to 1.00 by 2010 on the assumption that the widely-held view that the euro is undervalued is not just wishful thinking in the EU. The £/€ ratio remains constant at 0.630 on the expectation that the UK will monitor this rate, rather than the £/US$, and try to maintain it. The yen/€ ratio rises from 110 to 117 and indicates a slight but progressive weakening of the Japanese currency. The scenarios were designed before the 2002/03

appreciation of the €. We still think that in the long run our hypothesis will hold. However, the stability of the exchange rates between the EU and the new associate Member States will not seriously affect the international trade flows within Europe.

14. In the present scenario as well as in the other scenarios designed in this study, the rate of growth of real government expenditure is assumed constant during the simulation period and equal to 2.2 per cent.
15. For references, see note 1.
16. This section is heavily drawn from Bardazzi and Grassini (2003).
17. We thank Elisa Quinto and Alessandro Missale for their contributions on the design of the following scenario variables.
18. First, we have calculated the unweighted average tariff rate on imports originating from the EU for each country at the 4-digit level (data have been taken from www.mkassdb.eu.int, the database of the EU). Then, for each of the three CCs the average tariff rates for the 24 agricultural sectors (2-digit sectors), have been computed as a weighted average of the 4-digit rates, using as weights the value of Italian exports to the country (data on Italian exports have been taken from the COMEXT database) in question (see Table 8.8, first column).

    The structure by sector of Italian tariffs on products originating in the Czech Republic, Hungary and Poland has been computed using data on EU customs duties reported in the TARIC Consultation database (this database can be found at the web site http://europa.eu.int/comm/taxation_customs/dds/cgi-bin/tarchap of the European Commission or at the web site www.finanze.it of the Italian Ministry of Finance). We have again used the above procedure. First, we have computed the average of tariffs at the 4-digit level from the detailed data at the level of 8-digits and, then, the weighted average rate per sector using data on Italian imports for the three countries under examination. In the case of specific duties we have computed total tariff revenues using the volume of Italian imports of the particular product from the COMEXT database and then constructed the *ad valorem*-equivalent tariff rate. The average tariff rates by sector are reported in the second column of Table 8.8.
19. More precisely, a reduction of the average tariff rate per sector from its actual level to zero is considered equivalent to a change in the relative price of imported goods for the corresponding sector.
20. 'Coverage ratios' for each (2-digit) sector are computed as the percentage of imports (per sector) that are covered by at least one of the following NTBs:
    (a) Tariff Measures (other than *ad valorem*) such as tariff quota and temporary duties;
    (b) Price Control Measures countering the damage caused by the application of unfair practice of foreign trade/unfair foreign trade practices;
    (c) Standards and Other Technical Requirements, including quality, safety, health and other regulations;
    (d) Automatic Licensing Measures;
    (e) Monopolistic Measures;
    (f) Quantity Control measures that are however absent in EU-CEECs trade, having been lifted by the Europe Agreements.
21. Further sectoral results for personal consumption expenditures, prices, imports and exports cannot be shown here. These detailed results can be found in Grassini et al. (2001) and Bardazzi and Grassini (2003).

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